stack to the great self-feeding machine. A 25 horse power engine, a water tank, a cook house and dining room on wheels, a wagon and a lighter vehicle to do errands with,—all these go to make up the outfit of the man who hulls his neighbor's grain. A barley crusher is also almost a necessity. Some of this, yes all of it must be had, because the owner of the machine furnishes all the help necessary to run, and he must also board all his men, which are about 18 in number. They thresh, sack, and deliver the grain at any place on the ranch for 11½ cents per sack for wheat, and sleep out of doors during the whole time they are engaged thus. Such a threshing outfit cost more than $4000, be ides costing a great deal to keep it going. Barley, rye, and the smaller fields of wheat, and even all of it in many places are cared for as above described. In many places, however, where conditions of soil are favorable, a combined harvester and thresher is used in saving the crop. These machines cut from 20 to 35 feet in width, threshes, cleans, weighs, sacks the grain, and piles the straw and chaff, all as it moves along. The grain is dumped off and gathered up to be delivered at some place on the ranch. These machines are quite heavy and bunglesome in appearance and they require the combined strength of from 30 to 40 horses to draw them, but they get over a large area in a day, and have finished all as they went. The grain in sacks is piled up without any shelter, until the farmer is ready to market it. He has no fear of rain before Nov. 1, and even then he is not likely to be disturbed by it, though he may be. The marketing of the crop is also quite unlike the same thing as I had been accustomed to seeing it. From two to three wagons are coupled together, and heavily loaded with sacks; enough horses are then hitched to them to convey them where they are wanted. Thus it is not at all unusual to see as many as sixteen horses, all driven with a single line, taking a huge load of grain to market. Many of these wagons, except their wheels, look more like a small freight car than a wagon. The wheels are very large, with broad tires, and look as if they were almost a load of themselves. Then, too, there is almost as much to be said about the quality of the grain, as there is of the fruit. Having ripened without any rain,—for it does not rain in the summer,—the grain is much whiter and clearer in color, and the berry much more plump than any I had ever seen. I doubt if a better quality of grain is to be found anywhere in the world. The rise in prices of grain will do much to stimulate its production here, as at all other places where it can be successfully grown. It is hardly probable, however, that the yield here will ever be brought up to where it once was, unless some effectual method should be employed to renew the strength of the soil which has been much impoverished by years of tillage. Allowing the land to rest a year now and then, helps some, and puts off the necessity for more effective treatment for a time, but it must be done at last. Irrigation on a large scale, is coming this way, and will event ually, I think, revolutionize the agriculture of this valley. In a future paper I will tell you what it has done, and what it aims to do. At present, water is supplied to trees, stock and everything by means of windpumps, and one sees them everywhere. Some of the wheels are very large, and run two pumps of large caliber, but some are smaller, and every puff of wind sets them going. A wheel of little more than ordinary size will pump 1200 or more gallons of water per day, varying of course, according to the strength of air current. The water is stored in tanks or reservoirs, and from them is distributed as desired. Thus, three 24 foot wheels, irrigate completely a ten acre tract only a little distance from here. The water, too, is not difficult to obtain; from ten to thirty feet of boring, assures a supply sufficient for every purpose.

Of the grasses, there is not so much to be said. The principal native pasture grasses are wild oats and salt grass. The former makes good feed, and the latter is much better than no grass at all. It does not grow tall, has small needle like leaves and grows on throughout the long, hot and dry summer. It is the true native grass, and is somewhat difficult to kill out. It has no seed, but propagates itself from its roots. Once disposed of, it is done, for it comes up no more. Stock eats it quite readily, and keeps in good flesh on the diet. Stubble fields, rye sown for the purpose, and wild oats, after the salt grass constitutes the principal pasture lands. Alfalfa is successfully grown only where there is plenty of moisture. If nature does not provide it, it must be done artificially. Wherever irrigation is in operation, it is by far the leading grass. It yields from three to five cuttings per year, and is almost wonderfully nutritious. Horses fed upon it need little if any grain, and one acre will support three head of cattle and keep them fat all the year round. It makes a very quick growth during the hot weather, but a slow one during the cooler winter weather. But in the absence of the general culture of this grass, you will want to know how farmers manage for hay. Well, in the first place, it requires but little of this kind of feed in this climate, and what is needed is made from barely, wheat or wild oats, cut before it matures. This makes excellent rough feed. There are no broad acres of corn here; in fact there is practically none. In some localities Egyptian corn is raised, but it seems awkward to call it corn even with its modifying prefix. It resembles sugar cane and the top or head takes the place of the ear. But in this immediate locality, there is even none of that raised. The substitute as grain food for stock is principally crushed or soaked barely, which gives excellent satisfaction. I wish it were all thus used, for then there would be less dissipation and less of the beer which causes it.

San Francisco, the metropolis of the state, is its principal port of entry by water and the great distributing point for its products. From this city, great steamers carry our surplus to all the world. Inland markets are good, or bad in proportion as they are within easy or cheap distance from this great western commercial center. Such being the case, San Joaquin Co., is well favored indeed. Its county-seat, Stockton, nine miles north of Lathrop, is a most enterprising and thriving city, having a population of near 25000 souls. It is in the center of a great grain raising district, and probably 20 million bushels are marketed there each year. One of the buyers told me a few days after our arrival, that 700 tons per day had been coming in for some time, and that the same rate would probably hold out for several months. It is a prominent railroad center, and has large manufacturing interests, especially flouring mills. A very costly and beautiful court house is centrally located, and other things are in general keeping with it. In fact the city looks in every way as any town in the east of like importance would appear. One great system of railroads has for many years had this western country almost entirely at its mercy, and its mercy was not of the Bible kind. During the last few years, other lines have been opened, and competition has brought much relief. Stockton has several of these new lines, as well as the old line which had enriched itself at the people's and government's expense. But its greatest commercial advantage lies in the fact that it has water connection with San Francisco and the world. An unpromising slough dredged out, and the San Joaquin with the Sacramento rivers constitutes a channel through which an immense traffic is carried on. A fleet of 15 steamers and tugs, with 25 barges carried in 1893, 541,345 tons of freight between the terminals. The distance to San Francisco is about 70 miles, and freight rates by this route are 25c. per ton. Passenger fare, by steamer to the city is 25c.